Food and Agriculture Organization of the United Nations

Sustainable Forest Management Impact Program on
DRYLAND SUSTAINABLE LANDSCAPES
One country, one champion

Working towards land degradation neutrality in Tanzania

Championing sustainable beekeeping and honey production through the Sustainable Landscapes Production Framework

COUNTRY CONTEXT

Land degradation is one of the most persistent environmental challenges in Tanzania. It affects approximately 51 percent of the country's land area (Kirui, 2021), with soil erosion, loss of vegetation, and degradation of water catchments becoming increasingly widespread. It has consistently been ranked as the country's top environmental concern. The situation is made worse by unsustainable land management practices and the growing impacts of climate change (UNCCD, 2018). Smallholder farmers, who form the backbone of rural livelihoods, are particularly affected. Many rely on rain-fed agriculture on degraded or marginal lands, with limited access to inputs, services, and secure tenure. While sustainable land management (SLM) approaches offer long-term solutions, adoption remains very low. Barriers include limited extension support, insecure land rights, poor market access, and weak incentives for long-term stewardship. In this context, practical, low-cost and community-driven options are needed. One promising entry point is sustainable beekeeping (Prodanović, 2024).

Sustainable Beekeeping as for sustainable landscapes

Sustainable beekeeping offers a unique opportunity to link income generation with ecosystem conservation and restoration. It is a nature-based livelihood option that depends directly on healthy, biodiverse landscapes, and in turn, encourages communities to conserve and protect natural vegetation. Beekeeping supports land restoration in several ways:

- **Incentivizes conservation:** communities have a reason to protect forests, woodlands, and flowering vegetation that support bee habitats.
- **Reduces land pressure:** unlike many other income-generating activities, beekeeping does not require land clearing, irrigation, or synthetic inputs.
- **Promotes regeneration and increases production:** bees contribute to pollination, improving productivity of crops, trees, and wild plants that are essential for soil health and ecosystem recovery.

Beekeeping is especially relevant in dryland and degraded areas where farming options are limited. It is well suited to women and youth, as it requires minimal land and startup capital. When supported by training and market access, honey and other bee products can generate significant income. However, many small-scale beekeepers continue to rely on traditional log hives with low productivity, largely because of limited access to capital, improved equipment, and technical skills. Expanding production and reducing pressure on forest resources therefore requires not only materials and training but also well-functioning marketing systems that make bee products profitable. Reliable market access can inspire broader adoption, improve livelihoods, and encourage more active and participatory forest and land conservation.

KEY FACTS

Sustainable Landscapes Production Framework (SLPF)

A framework to harness positive agriculture-forestry-energy linkages by providing capacity development and income generating opportunities.

Geographic scope

Kaliua, Mlele, Sikonge and Urambo districts of Tanzania

Source: United Nations Geospatial. 2011. Map of Tanzania. In: United Nations. New York, USA, UN. [Cited 4 July 2024]. https:// www.un.org/geospatial/content/tanzania

Note: Refer to the disclaimer on the last page for the names and boundaries used in this map.

Target group

Forest and Farm Producer Organizations (FFPOs) and Community members

Gender

Based on the assessments undertaken in the landscape, 26 percent of households are female led. The approach focuses on gender inclusive interventions to empower women and ensure equitable participation in value chains.

Type of shock/crisis

46.3 percent of households mentioned that they have experienced some form of unexpected climatic shocks over the last three years, among which flood was the most prevalent, affecting 36.1 percent of households, followed by drought, affecting 10.8 percent of households.

SHOUT
SHARE
IT

Targeted interventions start with understanding the landscape - ILAM ensures decisions are backed by evidence.

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However, careful consideration is needed when promoting modern beekeeping. Experiences in Tanzania and across the region show that when equipment-intensive beekeeping models are introduced without adequate follow-up, they risk being abandoned. The time investment for managing modern hives is considerably higher than traditional hives, which often only require monthly visits. Farmers also lack resources for maintenance of modern machinery and appliances involved in honey and bee products processing. If not matched with realistic support and appropriate training, well-intentioned interventions can therefore fail to deliver long-term results.

The DSL-IP approach in Tanzania

Building on existing local knowledge and practices, the FAO-led Dryland Sustainable Landscapes Impact Program (DSL-IP) and its partners in Tanzania are working to scale up these promising practices. In close coordination with the Tanzania Forest Services, Tanzania Agriculture Research Institute, Beekeeping Training Institute, and local forest and farm producer organizations, the project applies integrated landscape management principles to strengthen beekeeping as an integrated part of landscape rehabilitation and rural development. Specific interventions include:

- Fostering sustainable beekeeping models, ensuring that honey and beeswax production are aligned with biodiversity goals and do not trigger overexploitation of forest resources.
- Building technical, organizational, and financial capacities among beekeepers and producer organizations through trainings, improved apiary management, and equipment support.
- Developing green value chains for differentiated Miombo honey, capitalizing on diverse floral sources and harvest timings to reach niche markets and enhance income.
- Embedding apiaries in restoration activities, so that reforested and rehabilitated landscapes become living sources of income, pollination services, and ecological recovery.
- Promoting integration of beekeeping with farming systems, including crops such as black beans and other species that both benefit from pollination and contribute to soil fertility and landscape restoration.

The project places emphasis on choosing appropriate technologies, supporting both modern and traditional beekeeping approaches depending on farmer context, and ensuring that interventions are affordable, manageable, and rooted in local practice. Through the provision of tailored technical capacity building, the project is committed to working with land user groups and local government institutions to improve livelihoods and promote drought resilience and sustainable forest and land management practices.

EVIDENCE-BASED, TARGETED AND TAILORED INTERVENTIONS

To ensure interventions are tailored and impactful, the DSL-IP is implementing the Integrated Landscape Assessment Methodology (ILAM) - a multi-level approach combining geospatial, focus group discussions, behavior change assessment, and household-level data. At the local level, assessments are guided by the SHARP+ tool, capturing how rural households manage natural resources and adapt to climate risks and tailored to look into barriers and motivators for sustainable beekeeping.

Findings from 631 households reveal both the observed benefits and remaining challenges in beekeeping (see figure 1), in Kaliua, Mlele, Sikonge and Urambo districts in Tanzania.

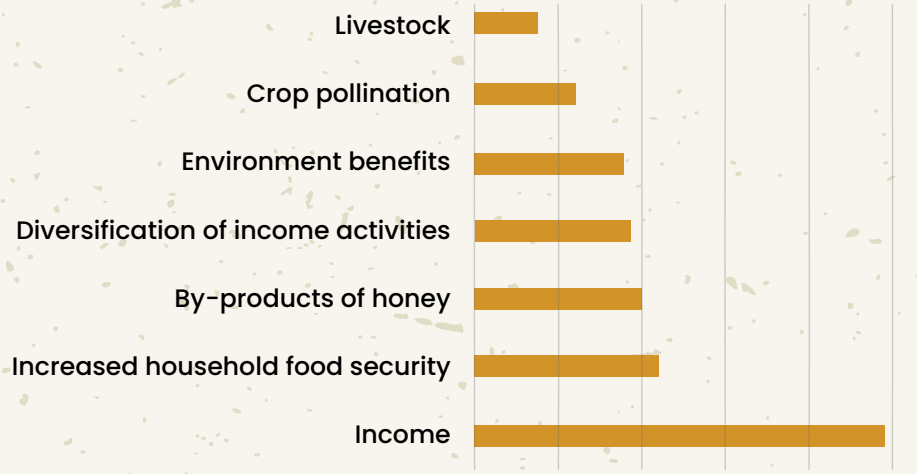
Household survey results show that most farmers engage in beekeeping, primarily for income generation and household use. But beekeepers are also seen as

"Beekeeping needs an area with conducive environment such as trees, so we need to conserve trees so as to get large number of bee colony, so as to get enough honey and income."

Smallholder farmer, household survey, 2025.

guardians of biodiversity, recognizing their role in forest conservation, relying on intact ecosystems for pollination and hive productivity. Despite this strong interest and environmental awareness, the sector faces persistent challenges, including lack of equipment, limited technical knowledge, restricted access to forest reserves, and low prices for bee products constrain the sector's potential. Still, interest is high – particularly around income diversification through value-added products like wax and propolis. There is also untapped potential in other bee products that are not yet widely produced. To ensure sustainability and broaden production opportunities, farmers can be supported with skills and technologies to process a more diverse range of bee products beyond honey and beeswax.

OBSERVED BENEFITS



CHALLENGES

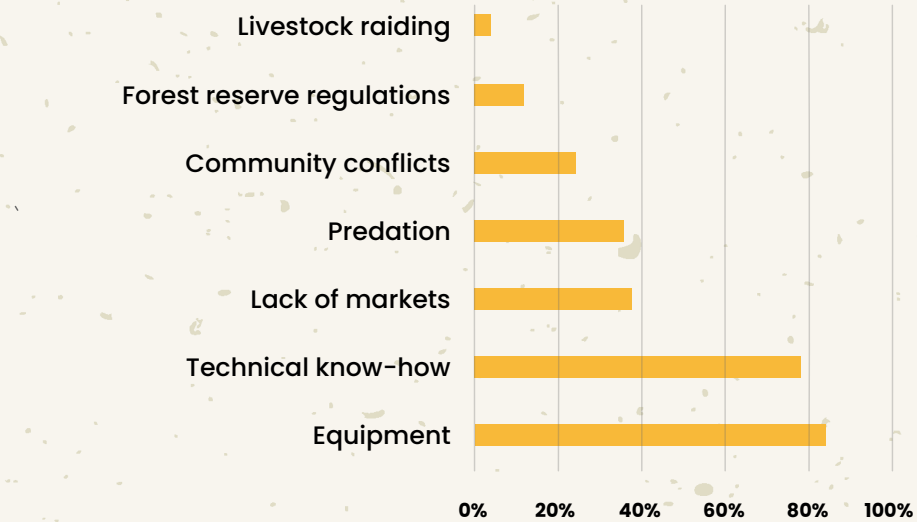


Figure 1: Observed benefits and challenges to beekeeping among farmers already engaged in beekeeping (n=296) in the project landscapes. **Source:** : Author's elaboration as result of SHARP+ Behavioural Change Household Survey carried out Kaliua, Mlele, Sikonge and Urambo districts of Tanzania)

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STRENGTHENING AND UPSCALING SUSTAINABLE BEEKEEPING

The information and evidence gathered from project landscapes is used by the project, in close collaboration with the Global Coordination project, as input in the DSL-IP Sustainable Landscape Production Framework (SLPF), an innovative approach to achieving LDN at landscape level composed of three key priority areas of intervention:

- **Community Seed Banks**
- **Farmer Field Schools**
- **Forest and Farm Facility**

The framework is implemented with direct support from FAO's mobilized knowledge hubs under its Community of Practices, and executed with support from national and regional partners, ensuring that technical recommendations, best practices, and lessons from previous projects are delivered to government officers, technical experts, service providers, landscape actors, and farmers in the landscape.

A central focus is to strengthen market systems for honey and bee products. Alongside technical training, interventions aim to improve access to markets, enhance quality through certification and standards, and develop collection centers and processing facilities that allow for aggregation, branding, and traceability. These efforts not only connect beekeepers to higher-value domestic and external markets but also increase incentives for sustainable forest management. By linking ecological benefits with stronger value chains, the program helps embed beekeeping within broader restoration strategies while supporting resilient rural livelihoods.

Through the DSL-IP Regional Exchange Mechanism (REM), a coordination structure dedicated to the Miombo-Mopane eco-region, the technologies, practices, and lessons from Tanzania's implementation of the SLPF are out-scaled to other countries in the region, enhancing the combined knowledge of the program, and fostering South-South cooperation and coordination.

EXPECTED IMPACT OF BEEKEEPING

The promotion of sustainable beekeeping was selected as a core theme of the project based on its potential to address multiple landscape-level priorities through an integrated, evidence-based approach. To assess the relevance and transformative potential of this theme within the broader landscape management strategy, three key impact criteria were applied:

- **Livelihoods and gender:** Can the proposed practices provide inclusive economic opportunities and reduce livelihood vulnerabilities, particularly for rural women and youth?
- **Land Degradation Neutrality (LDN):** Do the proposed practices contribute to restoring land productivity, reduce degradation, and increase ecosystem functionality?
- **Upscaling potential:** Is there scope for expanding or replicating the proposed practices in other landscapes or contexts within Botswana or beyond?

The following section outlines how these value chains and associated practices can contribute to each of these impact areas.

FARMING SYSTEM CHALLENGE	COMMODITY POTENTIAL FOR SYSTEM TRANSFORMATION	HOW THE SUSTAINABLE LANDSCAPES PRODUCTION FRAMEWORK SUPPORTS DELIVERY OF BENEFITS
IMPACT AREA: **Livelihoods and Gender Equality**		
High poverty levels and limited off-farm income in dryland regions.	Honey and beeswax production offers reliable, seasonal income with relatively low upfront costs and rapid returns.	Through **Forest and Farm Facility (FFF)**, producers receive business incubation, value addition skills, and market linkage support, ensuring beekeeping becomes a profitable and sustainable income stream.
Limited access to diversified livelihoods.	Beekeeping complements farming, requires minimal land, and can be practiced alongside other activities like agroforestry or crop production.	**Farmer Field Schools (FFS)** platforms demonstrate integrated beekeeping with crop and tree systems, enabling peer-to-peer knowledge exchange and uptake of diversified livelihood options.
Women's and youth underemployment.	Women and youth are increasingly involved in honey harvesting, processing, and trade, particularly in producer cooperatives.	**FFF** supports women- and youth-led cooperatives with equipment, processing facilities, and leadership training, while **FFS** fosters inclusive participation in technical training sessions.
IMPACT AREA: **Land Degradation Neutrality**		
Encroachment into forests due to agricultural expansion.	Sustainable beekeeping creates economic value from standing forests, incentivizing their preservation rather than conversion.	**FFS** and landscape-level planning look into strategic apiary placement supported by **FFF**-led market incentives for forest-friendly honey products.
Declining biodiversity and loss of pollinators.	Bees enhance pollination, which improves crop productivity, supports wild plant regeneration, and maintains floral diversity.	**FFS** modules build farmer knowledge on pollinator-friendly practices.
Degraded woodlands and poor management of forest resources.	Sustainable apiaries embedded in restoration areas encourage community stewardship and natural regeneration.	The SLPF combines restoration planning with apiary siting, linking **FFF**-backed market premiums for honey to communities engaged in woodland restoration.
IMPACT AREA: **Upscaling of Good Practices**		
Underutilization of national production potential.	Tanzania is currently producing just ~20percent of its honey and beeswax potential. The project contributes to national goals of doubling output by 2031.	
Fragmented and informal beekeeping practices.	The project strengthens value chains, enhances quality control, and supports organized Producer Organizations to engage more effectively in markets.	
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Table 1: Pathways to Land Degradation Neutrality: How Sustainable Beekeeping Can Restore Dryland Ecosystems
Source: Author's elaboration.

By aligning with the National Beekeeping Policy Implementation Strategy (2021–2031) and leveraging its rich forest beekeeping heritage, Tanzania has the opportunity to double production and emerge as a regional leader in sustainable honey and beeswax value chains. The DSL-IP project supports this ambition by creating models of sustainable practice that can be replicated elsewhere in the Miombo-Mopane ecoregion. Through South-South learning and the DSL-IP Regional Exchange Mechanism, Tanzania can share its experience with other countries facing similar landscape degradation and rural livelihood challenges.

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